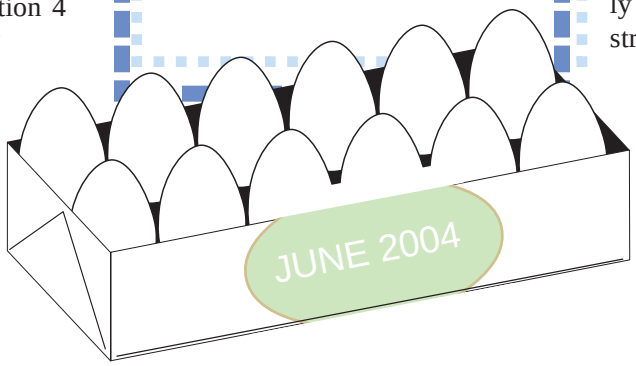
AN EGG STORY

Does the Date Mean "Too Late"?



Today's consumers must decipher a variety of dates on grocery products. "Use-by," "sell-by," and "best-if-consumed-by" dates are guidelines for how long the food item is considered fresh or safe. Table eggs are labeled with a "sell-by" date. But what's the real deal behind that date stamped on the carton?

Agricultural Research Service food technologists Mike Musgrove and Deana Jones, of the Poultry Processing and Meat Quality Research Unit in Athens, Georgia, tested the quality and functionality of eggs during 10 weeks of storage—well beyond the current 30-day industry standard for keeping eggs on the store shelf. Properly refrigerated, eggs are considered safe for consumption 4 to 5 weeks beyond the date they are packed.

Quality Comes First

Musgrove looked for a family of bacteria called Enterobacteriaceae, which includes *Salmonella, Escherichia, Enterobacter, Klebsiella,* and *Yersinia*. All can contaminate eggshells. If the eggs are handled or processed improperly, the bacteria can remain on the shells until they reach the consumer.

"Most eggs are sterile when formed, but may become contaminated as they exit the hen's body or from any surface they contact," says Musgrove. Fortunately, cleansing procedures protect the consumer from the bacteria. Eggs are washed with water that is between 90˚F and 120˚F, then rinsed with hot water and chlorine. The eggs are then placed in cold storage and shipped.

"Repeated testing of eggs after washing and packaging showed no Enterobacteriaceae bacteria contamination until the 5th week after processing. Fewer bacteria on the surface of the egg means fewer can get into the egg when they are cracked in preparation for consumption."

The eggshell and membranes under it provide a barrier that limits the ability of organisms to enter the egg. The shell surface has from 7,000 to 17,000 tiny pores that permit moisture and carbon dioxide to move out and air to move in. A natural protective coating called the cuticle helps preserve freshness and prevent microbial contamination. But since this coating is damaged or removed by processing, a thin layer of oil is applied to preserve the egg's internal quality.

Function Follows

Eggs are found in a wide range of foods, including baked goods and mayonnaise. The chemical properties of eggs give these foods the properties we love. But over time, eggs can lose their ability to fluff up an angel food cake or make mayo creamy. Does this happen at the sell-by date? Not according to Jones.

"During our study of egg functionality over 10 weeks of storage, we found no marked decrease in quality," she says. "Angel food cakes were light and fluffy using eggs stored up to 10 weeks." And safety isn't an issue for eggs that are fully cooked, since the high temperature destroys harmful microbes.

So what are we to make of the sell-by date? "Egg quality isn't affected for quite a long time, which allows for storage beyond the sell-by date," says Jones. Musgrove's data shows that current federal guidelines for producing and processing eggs appear to have a beneficial effect on microbial contamination—even during long-term storage—thus giving an extra cushion of safety and quality.—By **Sharon Durham,** ARS.

This research is part of Food Safety (Animal and Plant Products), an ARS National Program (#108) described on the World Wide Web at www.nps.ars.usda.gov.

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